

**Amendment to the Claims:**

**The following listing of claims replaces all previous versions and listings of claims:**

1. (Currently Amended) A method of horizontally structured CAD/CAM modeling and manufacturing process for one of fixtures and tooling, comprising:  
selecting a contact area geometry for tooling or fixture modeling;  
generating a tooling model exhibiting an associative relationship with said contact area geometry corresponding to said ~~contact area geometry~~;  
virtual machining said tooling model to generate said fixtures and tooling;  
generating machining instructions to create said fixtures and tooling; and  
~~said tooling model exhibiting an associative relationship with said contact area geometry,~~
2. (Original) The method of Claim 1 wherein said contact area geometry corresponds to a dimension of said tool or fixture.
3. (Original) The method of Claim 1 wherein said contact area geometry is two-dimensional.
4. (Original) The method of Claim 1 wherein said associative relationship is a parent/child relationship.
5. (Original) The method of Claim 1 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.
6. (Cancelled)
7. (Original) The method of Claim <sup>1</sup>~~1~~ wherein said associative relationship is a parent/child relationship.

8. (Original) The method of Claim 1 wherein said machining instructions comprise process sheets, drawings and documentation defining a part.
9. (Original) The method of Claim 1 wherein said machining instructions exhibit an associative relationship with said tooling model.
10. (Original) The method of Claim 9 wherein said associative relationship is a parent/child relationship.
11. (Original) The method of Claim 1 further including creating extracts.
12. (Original) The method of Claim 11 wherein said extracts comprise replicated models of said tooling model at various operations of said manufacturing.
13. (Original) The method of Claim 12 wherein said extracts are used to generate process sheets.
14. (Currently amended) A horizontally structured CAD/CAM model for ~~one of~~ fixtures and tooling, comprising:
  - a selected contact area geometry for tooling or fixture modeling;
  - a tooling model exhibiting an associative relationship with said contact area geometry that corresponds to said contact area geometry, and generated from said selected contact area geometry;
  - said tooling model including virtual machining operations to generate said fixtures and tooling; and
  - ~~said tooling model exhibiting an associative relationship with said contact area geometry.~~
15. (Original) The model of Claim 14 wherein said contact area geometry corresponds to a dimension of said tool or fixture.
16. (Original) The model of Claim 14 wherein said contact area geometry is two-dimensional.

17. (Original) The model of Claim 14 wherein said associative relationship is a parent/child relationship.

18. (Original) The model of Claim 14 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

19. (Cancelled)

20. (Original) The model of Claim <sup>14</sup>19 wherein said associative relationship is a parent/child relationship.

21. (Original) The model of Claim 14 further including machining instructions generated to create said fixtures and tooling said machining instructions comprise process sheets, drawings and documentation defining a part.

22. (Original) The model of Claim 21 wherein said machining instructions exhibit an associative relationship with said tooling model.

23. (Original) The model of Claim 22 wherein said associative relationship is a parent/child relationship.

24. (Original) The model of Claim 14 further including extracts.

25. (Original) The model of Claim 24 wherein said extracts comprise replicated models of said tooling model at various virtual machining operations.

26. (Original) The model of Claim 25 wherein said extracts are used to generate process sheets.

27. (Currently amended) A horizontally structured CAD/CAM tooling model for one of fixtures and tooling, comprising:

a selected contact area geometry for tooling or fixture modeling;

said tooling model corresponding to and generated from said contact area geometry and exhibiting an associative relationship with said contact area geometry;

said tooling model including virtual machining operations to generate said fixtures and toolings and

~~said tooling model exhibiting an associative relationship with said contact area geometry.~~

28. (Original) The tooling model of Claim 27 wherein said contact area geometry corresponds to a dimension of said tool or fixture.

29. (Original) The tooling model of Claim 27 wherein said contact area geometry is two dimensional.

30. (Original) The tooling model of Claim 27 wherein said associative relationship is a parent/child relationship.

31. (Original) The tooling model of Claim 27 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

32. (Cancelled)

33. (Original) The tooling model of Claim <sup>27</sup>~~32~~ wherein said associative relationship is a parent/child relationship.

34. (Original) The tooling model of Claim 27 further including machining instructions generated to create said fixtures and tooling said machining instructions comprise process sheets, drawings and documentation defining a part.

35. (Original) The tooling model of Claim 34 wherein said machining instructions exhibit an associative relationship with said tooling model.

36. (Original) The tooling model of Claim 35 wherein said associative relationship is a parent/child relationship.

37. (Original) The tooling model of Claim 27 further including extracts.

38. (Original) The tooling model of Claim 37 wherein said extracts comprise replicated models of said tooling model at various virtual machining operations.

39. (Original) The tooling model of Claim 38 wherein said extracts are used to generate process sheets.

40. (Currently amended) A storage medium encoded with a machine-readable computer program code for horizontally structured CAD/CAM modeling and manufacturing process for one of fixtures and tooling, said storage medium including instructions for causing a computer to implement a method comprising:

selecting a contact area geometry for tooling or fixture modeling;

generating a tooling model exhibiting an associative relationship with said contact area geometry ~~corresponding to said contact area geometry~~;

virtual machining said tooling model to generate said fixtures and tooling;

generating machining instructions to create said fixtures and tooling; and

~~said tooling model exhibiting an associative relationship with said contact area geometry.~~

41. (Original) The storage medium of Claim 40 wherein said contact area geometry corresponds to a dimension of said tool or fixture.

42. (Original) The storage medium of Claim 40 wherein said contact area geometry is two-dimensional.

43. (Original) The storage medium of Claim 40 wherein said associative relationship is a parent/child relationship.

44. (Original) The storage medium of Claim 40 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

45. (Original) The storage medium of Claim 40 wherein said tooling model exhibits an associative relationship with said contact area geometry.

46. (Original) The storage medium of Claim 40 wherein said machining instructions comprise process sheets, drawings and documentation defining a part.

47. (Cancelled)

48. (Original) The storage medium of Claim 40 further including instructions for causing a computer to implement a method for creating extracts.

49. (Original) The storage medium of Claim 48 wherein said extracts comprise replicated models of said tooling model at various operations of said manufacturing.

50. (Currently amended) A computer data signal for horizontally structured CAD/CAM modeling and manufacturing process for one of fixtures and tooling, said computer data signal comprising code configured to cause a computer to implement a method comprising:

selecting a contact area geometry for tooling or fixture modeling;

generating a tooling model exhibiting an associative relationship with said contact area geometry ~~corresponding to said contact area geometry~~;

virtual machining said tooling model to generate said fixtures and tooling;

generating machining instructions to create said fixtures and tooling; ~~and~~

~~said tooling model exhibiting an associative relationship with said contact area geometry.~~

51. (Original) The computer data signal of Claim 50 wherein said contact area geometry corresponds to a dimension of said tool or fixture.

52. (Original) The computer data signal of Claim 50 wherein said contact area geometry is two-dimensional.

53. (Original) The computer data signal of Claim 50 wherein said associative relationship is a parent/child relationship.

54. (Original) The computer data signal of Claim 50 wherein said tooling model is a three dimensional parametric solid model generated by extruding a reference set geometry of said contact area geometry.

55. (Cancelled)

56. (Original) The computer data signal of Claim 50 wherein said machining instructions comprise process sheets, drawings and documentation defining a part.

57. (Original) The computer data signal of Claim 50 wherein said machining instructions exhibit an associative relationship with said tooling model.

58. (Original) The computer data signal of Claim 50 further including code configured to cause a computer to implement a method for creating extracts.

59. (Original) The computer data signal of Claim 58 wherein said extracts comprise replicated models of said tooling model at various operations of said manufacturing.

60. (Newly added) The method of Claim 1, wherein said tooling model comprises at least one of an element, a characteristic, and a relationship of at least one of a part model, a reference set, a virtual blank, and a master process model.

61. (Newly added) The model of Claim 14, wherein said tooling model comprises at least one of an element, a characteristic, and a relationship of at least one of a part model, a reference set, a virtual blank, and a master process model.

62. (Newly added) The model of Claim 27, wherein said tooling model comprises at least one of an element, a characteristic, and a relationship of at least one of a part model, a reference set, a virtual blank, and a master process model.

63. (Newly added) The storage medium of Claim 40, wherein said tooling model comprises at least one of an element, a characteristic, and a relationship of at least one of a part model, a reference set, a virtual blank, and a master process model.

64. (Newly added) The computer data signal of Claim 50, wherein said tooling model comprises at least one of an element, a characteristic, and a relationship of at least one of a part model, a reference set, a virtual blank, and a master process model.